

November 9, 2000

Mr. Tom Wall
Ms. Deborah Nagle
Cooling Water Intake Task Force
Office of Science and Technology
c/o Cooling Water Intake Structure (New Facilities)
Proposed Rule Comment Clerk (Docket #W-00-03)
Water Docket (Mail Code 4101)
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

**Re: U.S. EPA's Proposal to Regulate Cooling Water Intake Structures for
New Facilities Pursuant to § 316(b) of the Clean Water Act
(65 Fed. Reg. 49,060; August 10, 2000) [Docket Number W-00-03]**

Dear Mr. Wall and Ms. Nagle:

The Office of the Chief Counsel for Advocacy of the U.S. Small Business Administration (the "Office of Advocacy") was created in 1976 to represent the views and interests of small businesses in Federal policymaking activities. The Chief Counsel participates in agency regulatory actions when he deems it necessary to ensure proper representation of small business interests.

The Office of Advocacy has reviewed the U.S. Environmental Protection Agency ("EPA") proposal to regulate cooling water intake structures for new facilities pursuant to § 316(b) of the Clean Water Act, published in the *Federal Register* on August 10, 2000 (65 Fed. Reg. 49,060). The proposed rule would establish national requirements applicable to the location, design, construction, and capacity of cooling water intake structures at new facilities. The proposed national requirements are intended to minimize adverse environmental impacts, such as impingement and entrainment of aquatic organisms, associated with the use of these structures.

We are concerned that the rule could impose substantial compliance costs on small businesses and other entities, particularly those involved in manufacturing and the cogeneration and other power generation sectors, without demonstrated reductions in environmental risks. As discussed further below, we believe the Agency can do more to reduce burdens of the rule on small business entities and still reduce the risk of adverse environmental impacts from intake structures.

The proposed rule would apply the national requirements only to new facilities with a design intake water flow of greater than 2 million gallons per day ("MGD"), and where at least 25% of the intake water flow is for cooling purposes. The Agency also is contemplating

applying the national requirements to new facilities located on waterbodies where the facility's design intake water flow is more than 1% of a waterbody's mean annual flow or volume, depending on waterbody type. EPA has estimated, in its economic and engineering analysis for the proposed rule, that 40 new power generation facilities and 58 new manufacturing facilities would be subject to the rule over the next twenty years. The Agency's estimates of new manufacturing facilities focused only on the largest four categories of industrial users of cooling water in the manufacturing sector.¹

1. The Rule's Proposed Applicability Thresholds Are Not Adequately Supported or Justified by the Scientific Information on Which the Agency is Proposing to Base the Rule.

We believe it is appropriate for the Agency to apply the rule only to new facilities that exceed minimum intake flow thresholds, since facilities with larger intake flows are more likely to cause adverse environmental impacts if left unregulated. However, we are concerned that EPA has not provided an adequate justification for its particular choice of thresholds. This is particularly disturbing because the rule, as proposed, could capture many more small businesses than EPA's analyses suggest, including small businesses in sectors not specifically considered by EPA. For example, the Agency did not specifically look at the food products, rubber and plastic products, fabricated metal products, and electrical equipment and components manufacturing sectors, each of which contains thousands of small businesses. (See U.S. Census Database for 1997, *Employer Firms, Employment and Estimated Receipts by Employment Size of Firm*; see also footnote 1, above.) Many of these small businesses are significant users of cooling water, some of which could become subject to this rule.

Furthermore, the significant costs associated with complying with the rule could erect a competitive barrier to small business by deterring new small businesses from entering into business activities that would require the use of cooling water in amounts above the thresholds. Alternate sources of water, including from public water systems or groundwater, also frequently are costly and do not provide for small businesses a feasible alternative to the use of surface water sources. In light of the inadequate evidence showing adverse environmental impacts at the low intake flows proposed, discussed further below, we believe the thresholds can be increased to minimize the rule's potential burdens on small business entities.

EPA is proposing to set the basic applicability threshold at 2 MGD to ensure that almost all cooling water withdrawn from surface waters nationwide is covered by a national regulation. (See Preamble, at 49,067-68.) The Agency believes the cooling water intake structure withdrawals that are at or below a 2 MGD threshold would generally only have a very small

¹ EPA prepared estimates of anticipated new facilities in the paper and allied products (SIC 26), chemicals and allied products (SIC 28), petroleum and coal products (SIC 29), and primary metals (SIC 33) industry categories. The Agency did not specifically look at other manufacturing sector industries that are potentially significant users of cooling water, including food products, rubber and plastic products, fabricated metal products, and electrical equipment and components. These other manufacturing sectors include many small businesses, some of which also could become subject to this rule.

adverse environmental impact. (*See id.*) EPA believes that withdrawals greater than 2 MGD would have greater environmental impacts. (*See id.*)

Despite this, however, EPA's primary focus for the proposed rule appears to be on regulating major new facilities with substantial cooling water withdrawals. Virtually all of the information on environmental impacts relied on by EPA in the rulemaking materials is associated with *major* power plants with water intake flows *substantially greater* than the current 2 MGD size threshold. The Agency acknowledges that most of the case studies documenting impacts from cooling water withdrawals in the past have focused on facilities withdrawing very large amounts of water (in most cases greater than 100 MGD). (*See Preamble*, at 49,067-68.)

EPA also acknowledges that there is very little information currently available regarding the lower bound of withdrawals at which adverse environmental impacts might occur. (*See Preamble*, at 49,067-68.) The Agency only points to a single impingement and entrainment study for a proposed power generation plant (the proposed Athens Generating Company facility) in New York State² in support of its belief that withdrawals greater than 2 MGD would have adverse environmental impacts. The study projected that fish mortalities would occur at that proposed facility, at a proposed maximum withdrawal rate of 7.5 MGD and a proposed 4.2 MGD average withdrawal rate.³

There is serious reason to question, however, the significance of the mortality projections in that study. The study estimated the average aquatic impacts to young-of-year ("YOY") fish that would have occurred during 1981 - 1987 at the proposed plant under assumed "worst case" (cooling water withdrawal of 7.5 MGD) and "average" (cooling water withdrawal of 4.2 MGD) conditions.⁴ The estimated percentage reductions in fish for every species reported in the study, under both these "average" and "worst case" conditions, was *substantially less than 1%*.⁵

² See the Preamble of the proposed 316(b) New Facility rule, at p. 49,068.

³ EPA 316(b) docket DCN 1-1039-TC; *see also In the Matter of ATHENS GENERATING COMPANY, L.P. (Case #97-F-1563)*, Prepared Testimony of Edward W. Radle, Steam-Electric Unit Leader, New York State Department of Environmental Conservation (Feb. 10, 1999).

⁴ The following are the study's estimates of the average aquatic impacts to young-of-year ("YOY") fish that would have occurred during 1981 - 1987 at the proposed Athens Generating Station under "worst case" (cooling water withdrawal of 7.5 MGD) and "average" (cooling water withdrawal of 4.2 MGD) conditions, as reported by the New York Dept. of Environmental Conservation (*see In the Matter of ATHENS GENERATING COMPANY, L.P. (Case #97-F-1563)*, Prepared Testimony of Edward W. Radle, Steam-Electric Unit Leader, New York State Department of Environmental Conservation (Feb. 10, 1999).):

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EPA, however, takes the position elsewhere in the rule’s Preamble that it considers a 1% reduction in the population of aquatic organisms to be “a reasonable means to protect about 99 percent of the organisms in the water column,” and “a reasonable approach for defining adverse impact.” (See Preamble, at p. 49,074.)⁶ Consequently, EPA does *not* consider reductions in fish populations of less than 1% to be an adverse environmental impact.

Since the Agency considers that reductions in the population of aquatic organisms of less than 1% does *NOT* constitute an adverse environmental impact, this one study (*i.e.*, of the Athens plant) that the Agency uses to support a 2 MGD threshold does *not*, according to the Agency’s own position, demonstrate the existence of adverse environmental impact at 2 MGD. Furthermore, the study does *not* demonstrate the existence of adverse environmental impact even at the *higher* withdrawal flows of 4.2 MGD and 7.5 MGD.

Hence, EPA is *unable* to document any significant adverse environmental impact at water withdrawal volumes at or near the proposed threshold level of 2 MGD. Rather, the threshold figures appear to be set specifically to capture a significant number of facilities by the rule, rather than to focus on demonstrable environmental harm from withdrawals at the threshold level. In

| SPECIES | Estimated Mean 1981-87 YOY Fish Population | YOY Lost; Worst case (@7.5 MGD) [% of Total Population Lost] | YOY Lost; Average case (@4.2 MGD) [% of Total Population Lost] |
|---------------|--|---|---|
| American Shad | 21,400,000 | 41,000 [0.19%] | 23,000 [0.11%] |
| Alosa Spp. | 1,110,000,000 | 3,151,000 [0.28%] | 1,765,000 [0.16%] |
| Striped Bass | 31,800,000 | 2,100 [0.006%] | 1,200 [0.0038%] |
| White Perch | 37,900,000 | 39,000 [0.10%] | 22,000 [0.058%] |

⁵ The range of percentages under the “worst case” conditions was only 0.006% - 0.28%, and the range under the “average” conditions was an additional 44% lower, namely, 0.0038% - 0.16%. (See footnote 4.) The highest percentage estimated (0.28%) was under the “worst case” conditions. The proposed plant would withdraw 4.2 MGD on average, or 44% less than the maximum “worst case” conditions. Moreover, the proposed plant would withdraw the maximum capacity only a small percentage of the time, and there would be fewer than average numbers of eggs in the water column at the depth where the cooling water intake structure would be located even though the model used in the study assumed a uniform distribution. (EPA 316(b) docket DCN 1-1039-TC.)

⁶ The Office of Advocacy does *not* endorse this definition of adverse environmental impact, as it believes it to be too restrictive. However, EPA’s definition illustrates how, even when the Agency’s own proposed very conservative definition of adverse environmental impact is used, the study of the Athens plant *still does not identify any significant adverse environmental impacts* associated with water withdrawals of 4.2 or 7.5 MGD at the proposed facility. Predicted impacts at a 2 MGD withdrawal rate would have been *even less*.

light of this, we are concerned that this proposal is not supported or justified by the scientific information on which the Agency is proposing to base the rule, and relatively small facilities with cooling water withdrawals as small as 2 MGD could be subjected to substantial compliance costs without any demonstrated reductions in environmental risk being achieved. EPA's current justification for the 2 MGD threshold is that it captures 99.97% of all cooling water flows. However, the 10 MGD threshold that we suggest below is equally supportable, since it captures 99.67% of the flow (only a 0.3% difference).

In the absence of any scientific evaluation on which to base the current threshold, we believe EPA should adjust the basic threshold in the rule to levels which are supported by the only existing information which indicates there may be a potential for problems at facilities well in excess of the currently proposed threshold. We believe the Agency should adjust the rule's basic 2 MGD applicability threshold to 10 MGD. The 10 MGD threshold is derived from the State of Maryland, which has the most comprehensive and technically based cooling water permit program in the United States.⁷ Withdrawals in the order of 10 MGD are more in line with the Agency's limited scientific information. Furthermore, a 10 MGD threshold would still cover 99.67% of all cooling water flows, as discussed earlier.

Moreover, EPA should not adopt the 1% of mean annual flow or volume threshold it is contemplating because the Agency has provided no evidence that this level is needed to eliminate a problem. On the other hand, if there is evidence that a higher flow or volume threshold would solve a problem, a flow or volume threshold set at the higher level should be considered.

Other commenters to this rule have submitted proposals to the Agency that recommend, in addition to adjusting the basic threshold to 10 MGD, adding a second tier to the applicability threshold for certain intakes of between 10 and 25 MGD (where such intake flows do not exceed 10% of a stream's 7Q10 flow, 10% of the mean annual volume of a lake or reservoir, or 10% or the volume of the water column near an intake in a tidal river or estuary). EPA should seriously evaluate such proposals for inclusion in the final rule.

Finally, EPA should adopt an absolute minimum flow threshold (such as 100,000 gallons/day, or higher, of water used for cooling purposes), in conjunction with the percentage of waterbody flow or volume threshold, to ensure that smaller new facilities located on fairly small waterbodies are not subjected to excessively stringent national standards. Smaller facilities are more appropriately addressed on a case-by-case basis, with any requirements specifically tailored to reflect site-specific conditions.

⁷ Maryland waives cooling water intake requirements for facilities withdrawing less than 10 MGD if the volume withdrawn is less than 20% of the streamflow for nontidal waters or the annual average net flow past the intake for tidal waters (*see* the Agency's economic and engineering analysis).

2. EPA Should Define a Cooling Water Intake Structure Where at Least 50% of the Withdrawn Water is to be Used for Cooling Purposes.

Section 316(b) of the Clean Water Act is aimed at regulating intake structures that withdraw *cooling* water, *not process* water. However, EPA currently is proposing to define a cooling water intake structure as any structure where as little as 25% of the withdrawn water is used for cooling purposes. Hence, many facilities, including those of small businesses, that use surface waters predominantly for *process* purposes would be subjected to the requirements of this rule that is supposed to regulate *cooling water* intake structures only.

It is not clear what or how much adverse environmental impact associated with cooling water withdrawals would be eliminated by such a standard. But it is clear that this standard could affect a significant number of small businesses. Again, this threshold figure appears to be set specifically to capture a significant number of facilities by the rule, rather than to focus on eliminating demonstrable environmental harm.

EPA should continue to define a cooling water intake structure as it did in the Agency's 1976 final rule and 1977 guidance, where at least 50% of the withdrawn water is to be used for cooling purposes. By increasing the percentage to 50%, compliance costs would be decreased by one-third, and at least half of the projected small manufacturing businesses' new facilities would be relieved of the rule's burdens.⁸

3. EPA Needs to Clarify How the Percentage Use Threshold Would Be Applied at Facilities Which Use Withdrawn Water for Both Process and Cooling Purposes.

Many facilities use withdrawn water in varying proportions over time for process versus cooling purposes. Furthermore, industrial facilities often preheat process water with energy captured from operations inside the facility. A common way of doing this is to run the water first through a use where heat will be transferred to the water (such as in a steam condenser) and then use it for other for process purposes. Moreover, some facilities use process water to perform subsequent cooling functions. Such practices conserve both water and energy. If such uses of water would constitute a "cooling water" function for purposes of applicability of the 316(b) standards, then in some cases facilities would be compelled to cease these practices, with substantial adverse environmental and energy consequences.

For example, industrial facilities would need to separate their cooling water from their process water to meet the standards for cooling water intake structures, with the result that they

⁸ Compliance costs would be decreased by one-third (\$6.9 million reduced to \$4.8 million), and at least two (of four) small manufacturing businesses' new facilities would be relieved of the rule's burdens, amounting to at least a 50% decrease in impacts to small businesses. (See p. 7-27 regarding the "50% option," and pp. 9-6 and 9-7, of the June 2000 economic and engineering analysis.)

would lose the benefit of recovering waste heat for process purposes. Moreover, the lost heat that was going into the process of water use would result in the increased burning of fossil fuels to make up for the additional heat required. This burning of additional fossil fuels would result in other adverse environmental impacts such as higher air pollutant emissions and creation of greenhouse gases. These unintended consequences to the environment are negative and should be considered in the evaluation of adverse environmental impacts under this rule.

It is unclear how the rule's percentage use threshold would be applied at facilities where intake water is used in varying proportions over time for cooling versus process purposes, or where water may be used initially as cooling water and subsequently reused as process water in the plant. It is also unclear how the percentage use threshold would be applied at facilities that use withdrawn water only intermittently for cooling purposes (*e.g.*, for makeup water).

EPA needs to clarify how the percentage use threshold would be applied at facilities which use withdrawn water in varying proportions over time for process versus cooling purposes. The percentage of use should be defined in terms of a long term average use at the facility, for example, an annual average. Where water is used initially as cooling water and subsequently reused as process water in the plant, or vice versa, such water should be excluded from the definition of cooling water, since it also serves a "process water" function. The Agency should encourage facilities to reuse water, because of the environmental advantages of reusing such water and capturing what would otherwise be wasted energy.

4. EPA Needs to Provide a Reasonable Definition of "Adverse Environmental Impact" in the Rule.

The proposed rule does not define "adverse environmental impact." As a result, it is impossible to evaluate whether the technology-based approach proposed by the Agency in this rule would minimize adverse environmental impact at new facilities. The language of the Preamble and the rule seem to assume that the impingement and entrainment of organisms is in and of itself adverse environmental impact. Defining the mere existence of impingement and entrainment of organisms as adverse environmental impact is overly simplistic and ignores a number of important factors (including the severity of the impact with respect to the health of the resource, the reversibility of the impact and the survival rate of entrained organisms, and the ability to mitigate damage or restore the resource) that will determine whether or not an environmental impact is, in fact adverse. Because this definition ignores these factors, it will lead to expenditures of resources that are not justified by the benefits that result from those expenditures.

A reasonable definition of adverse environmental impact needs to be provided in the rule so that there is a definitive endpoint for determining the efficacy of proposed requirements. Adverse environmental impact should take into account effects on the entire population of the aquatic community, and consider seasonal and natural variability and other appropriate site-specific conditions.

5. ***Facilities Should Be Given the Option of Performing Site-Specific Ecological Assessments.***

The application of uniform national standards, as EPA has proposed in this rule, likely will result in numerous instances where technology and other measures are required, even though little or no adverse environmental impacts would result. In instances like this, new facilities should be given the option of performing site-specific ecological assessments, which could show that there is no need for additional controls because the study demonstrates no significant ecological impact at the point of intake. These assessments would enable case-by-case “best technology available” determinations to be made. Under such case-by-case determinations, any technology requirements would be tailored to site-specific conditions so that the facilities are not burdened with requirements for their intakes in excess of what is needed to minimize adverse environmental impacts. The Agency should set reasonable eligibility criteria for small businesses and others to obtain case-by-case determinations.

* * * * *

In summary, we believe it is appropriate for the Agency to provide minimum intake flow thresholds in the rule. If appropriately established, thresholds could provide significant relief for small businesses and other entities while also being protective of the environment. The thresholds as currently contemplated, however, are not supported or justified by the scientific information on which the Agency is proposing to base the rule, and thus could impose substantial compliance costs on entities without any demonstrable evidence of environmental risk. EPA should consider increasing the basic threshold to 10 MGD. The Agency also should consider setting a flow or volume threshold at an appropriate level only if there is evidence that a flow or volume threshold would solve a problem. Moreover, at least 50% of the intake water flow should be for cooling purposes. Such thresholds are more in line with the available scientific information.

Sincerely,

/s/

Jere W. Glover
Chief Counsel for Advocacy

/s/

Jonathan R Pawlow
Assistant Chief Counsel
for Environmental Policy